

temperature and pressure changes are also considered and the usual formulæ deduced. Then follows, in lecture v., the investigation to a first approximation of mixtures of two fluids, leading to the discussion of fusion and solubility curves. Finally, in lecture vi., vaporisation curves and the theory of the galvanic cell fall to be considered. The same fundamental method is used throughout, the thermodynamic potential being first formulated, and then by differentiation the quantity known as the molecular potential. Detailed examples elucidate the method; and there is no doubt that (to paraphrase his own words) the author has demonstrated, not only the great use of the thermodynamic potential, but also the ease with which it can be manipulated. Dr. van Laar has placed in the hands of the student of thermodynamics a well-written and serviceable pamphlet.

The Family. By Helen Bosanquet. Pp. vii + 344. (London: Macmillan and Co., Ltd., 1906.) Price 8s. 6d. net.

THE "Family" is a subject of far greater extent than most persons may think. Its importance to society is enormous, though, like the air we breathe, it attracts little attention. The variety in the constitution of family life in different places and at different times is extraordinary. Its peculiarity in any given case is the result of many influences, including long-standing tradition, economic causes, natural instincts, and legislation on succession of property. The author has given a valuable *résumé* of facts and opinions derived from more than thirty writers of note, and she has blended them into a pleasant and readable volume which will open out new and wide vistas of interest to most of those who study it. She says that the history of the Family "is a great work waiting for a great scholar." It is no disparagement to this book to add that she speaks truly; only it seems to the writer of this notice that a still more important requisite than scholarship is a more enlightened statistical treatment of the subject than it has for the most part yet received.

One of the many of these desiderata is an exact analysis of the effects of different forms of the Family on the eventual well-being of the race. These have a strong influence on the marriages or on the celibacy of its members. The influence of the Family inclusive of religion, in France, is such that in the year 1900, as stated, no less than sixty-four thousand women were immured for life within convent walls. Some forms of family life may be found to exert a considerable eugenic effect on the nation, others the contrary; how far has yet to be investigated. In the view of the author the power of the Family is not decaying in England. She thinks it has developed in a changed direction, through replacing a slavish submission to the head of the family by feelings of willing loyalty. The proved habit of the artisan class to contribute to the well-being of the Family is to her an evidence of the strength of the bonds that still unite its members. In conclusion, it should be said that this volume contains occasional passages of rare eloquence, such as those in p. 160 and onwards, on the very real and spiritual entity of the Family. F. G.

The Evolution of Man: a Popular Scientific Study. By Ernst Haeckel. Translated from the fifth (enlarged) edition by Joseph McCabe. Two vols. in one. Pp. xiv + 364. (London: Watts and Co., 1906.) Price 2s. net.

A TRANSLATION of the fifth edition of Haeckel's famous book is now procurable for two shillings! It is true that the text has been somewhat condensed, and that the beautiful plates of the complete edition have had

to be omitted, but the gist of the matter is here, and is illustrated by more than four hundred figures. Moreover, a library edition of the complete work is also available to English readers. As is well known, the first half of the book contains a general account of the development of vertebrates, and of man in particular, while the second half discusses the chief phyletic stages from protists to man, and the gradually increasing differentiation of the various organs and systems. There is a great deal of embryology and comparative anatomy in the book, but there is very little *aetiology*, and the English title "The Evolution of Man" is rather misleading. The original title was "Anthropogenie." Many parts of the book, e.g. those dealing with the development of the foetal membranes and of the excretory system, are very technical and difficult; serious students of biology will find these intricate subjects more clearly discussed elsewhere, and we do not think that other readers will understand them. The translation bristles with mistakes, some of which show that even the translator has not always understood his text. The kind of mistake we allude to is translating "Rest der Chorda" as "rest of the chorda," and "Zungenbogen" as "hyaloid bone."

Untravelled England. By James John Hissey. Pp. xviii + 459. (London: Macmillan and Co., Ltd., 1906.) Price 16s.

THE author describes how he set forth in search of unfrequented spots in his own country, and goes on to provide a pleasing and quietly entertaining account of the out-of-the-way places he visited. The start from Eastbourne in a motor car does not, it must be confessed, encourage the reader to expect much in the way of romance; but the motor car, because of its persistently satisfactory conduct, does not obtrude itself into the narrative. There is no attempt at "fine" writing, yet the author succeeds in maintaining the reader's interest in the English and Welsh villages passed through, and in conveying a pleasing impression of the characters of the natives encountered. The volume is illustrated by twenty-four half-tone reproductions from photographs taken by Mr. Hissey on the journey.

LETTERS TO THE EDITOR.

[The Editor does not hold himself responsible for opinions expressed by his correspondents. Neither can he undertake to return, or to correspond with the writers of, rejected manuscripts intended for this or any other part of NATURE. No notice is taken of anonymous communications.]

A Japanese Singing Kettle.

THE town of Morioka is well known for the manufacture of the iron kettle which is indispensable in every Japanese household. There exist numerous forms of kettle; several dozen shapes may be counted in a single shop, but the most frequently occurring forms are cylindrical, pear-shaped, and spherical. The kettle is used for boiling water by means of charcoal fire for making tea. On approaching boiling point, some of these kettles begin to sing with quavering sound, which is a combination of different notes, peculiar to the form and size of the kettle.

There are several arrangements for producing sound, of which the following will indicate the manner in which the vibrations are produced. Inside the kettle, the bottom is nearly flat. On this four pieces of sheet iron, 15 mm. sq. and 0.4 mm. thick, are glued by means of Japan lac (*urushi*), which can well withstand the temperature of boiling water. Between the bottom and the plates is an air space nearly $\frac{1}{2}$ mm. thick. The plates are nearly in a plane, and almost touch each other, leaving thin slits between them. When the kettle is full the cell is under the water, and some air remains in the cell between the

plates, but as it is the part strongly heated by the fire, the cell is filled with steam, which escapes in bubbles through the slits; the water then creeps into the cell, to be converted immediately into steam. This process goes on at first intermittently, but it soon reaches a stationary state. The bubbling of steam through the slits acts as exciter, and the kettle emits sonorous notes, which may be likened to the ruffling of pine trees by a gentle breeze or the sound produced by stridulating insects. The difference of sound is mainly due to the form of the kettle rather than to the method of exciting the vibration. To make the kettle sing loudly it is necessary to regulate the fire in such a way that the expulsion of steam bubbles from the cell is in good accord with the natural period of vibration of the kettle, so that it is set in sympathetic vibration. Excessive heating is, therefore, unfavourable to singing.

Various forms of steam exciter can be easily designed, and different manufacturers seem to have their own speciality. When and where this method of exciting the vibration came into use is not well known, but as the kettles were common for many centuries, the exciter seems to have been invented by the amateurs of teaism (*chanoyu*) long before Western science was introduced to Japan.

H. NAGAOKA.

Science College, Tokyo, September 27.

Bursaries at the Royal College of Science, London.

SCIENCE scholars selected from the whole of Great Britain for their ability and promise, maintaining themselves on 17s. 9d. per week, are year by year saved from much privation by secret gifts of small bursaries—see the subjoined audited account for last year.

I have no right to ask for help from the generous men who helped me last year, but I have all the sturdiness of a chartered beggar. I ask in a good cause.

It was originally intended that these bursaries should be given only to such National Scholars as required assistance, but some of the subscribers have given me power to assist other students of the college. Also one of the two City companies has given me power to grant an occasional bursary of more than 10*l*. It is understood that every student is morally bound to repay this money to the fund at some future time.

JOHN PERRY.

November 12.

ROYAL COLLEGE OF SCIENCE.

BALANCE SHEET, BURSARIES, 1905-6.

Moneys Received and Paid by Prof. Perry from July 12, 1905, to July 12, 1906.

Received.

	£	s.	d.
July 12, 1905—Balance in hand	22	19	0
," " —Royalty on Slide Rules	1	4	0
Oct. 20, " —	2	11	0
Nov. 6, " —Dr. Sprague	20	0	0
," 13, " —A. T. Simmons, Esq.	10	0	0
," 16, " —Oscar Guttman, Esq.	1	1	0
," 21, " —The Drapers' Company	100	0	0
Dec. 4, " —Robert Kaye Gray	10	0	0
," 7, " —Matthew W. Gray	10	10	0
Jan. 13, 1906—George Beilby, Esq.	10	10	0
," 13, " —Royalty on Slide Rules	3	15	0
," 16, " —The Goldsmiths' Company	100	0	0
July 6, " —Royalty on Slide Rules	1	1	0
	£293	11	0

Paid.

July 12 to Dec. 20, 1905—			
One Bursary	7	0	0
Two Half-Bursaries, each £7 10s.	15	0	0
Twenty-three Half-Bursaries, each £5	115	0	0
April 6 to June 15, 1906—			
Two Half-Bursaries, each £7 10s.	15	0	0
Twenty Half-Bursaries, each £5	100	0	0
Balance	41	11	0
	£293	11	0

Audited and signed by

WILLIAM A. TILDEN.

July 17, 1906.

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LAKE BALATON.¹

LAKE BALATON, the largest lake in the Hungarian Plain, occupies a basin of internal drainage at the level of 343 feet above the sea, and has an area of some 230 square miles. It is well known from the watering-places and mineral springs upon its shores. In 1891 the Hungarian Geographical Society appointed a commission to undertake a detailed investigation of the lake. The scheme was supported financially by the Hungarian Minister of Agriculture, the Hungarian Academy of Sciences, and Dr. Andor von Semsey. The results are being published in three volumes; the first deals with the geography, geology, hydrography, climate, and the physical and chemical characters of the lake water. The second volume is devoted to biology; the third to the anthropography, ethnography, archaeology, bibliography, and the description of the watering-places. There is also an atlas. Several sections of the work and the topographic atlas have been issued. They contain contributions to all three volumes, and illustrate the thorough nature and wide range of the work.

The report on the ethnography, by the late Dr. Johann Jankó, translated by Dr. Willibald Semayer, is the longest contribution, and is perhaps of most general interest. It begins with a concise geographical description of all the localities around the shores of the lake, and then gives an interesting discussion of the place-names. They are mainly Magyar, with some Sclav and German additions. The place-names are classified into groups, based on orographic and hydrographic conditions, on plants, on the general features of the vegetation, on animals, on soils and rocks, on echoes (as in Ekko and Zongo odal, "the resounding side"), on industries, ecclesiastical terms, family and personal names, and races. (English occurs in the term Angol zollok, the "English vineyard," and in other names associated with gardens.) Other places are named after the days of the week, military terms, numerals, and unnatural death (such as "Olo" for murder). Historical place-names are placed as a special group, and they can be traced back to between the eleventh and fifteenth centuries; they are regarded by Dr. Jankó as of especial historical value as showing the unbroken continuity of the Magyar occupation of the Balaton district during the past nine centuries, in spite of the invasions of Tartars and Turks. The old families who have been domiciled round Lake Balaton for at least a century are mostly Hungarians; 6.5 per cent. are Jews, and 1 per cent. are foreigners. The census of 1890, enumerating a population of 55,000, gave their numerical proportions as follows:—98.809

¹ "Resultate der Wissenschaftlichen Erforschung des Balatonsees." Balatonsee-Commission der Ung. Geographischen Gesellschaft. (Vienna: Ed. Hölszel, 1902-1906.)

Vol. i. "Physische Geographie des Balatonsees und seiner Umgebung." Part iv., Sect. 3, Resultate der Phytophanologischen Beobachtungen in der Umgebung des Balatonsees. By Dr. Moriz Staub, completed by Dr. J. Bernatsky. 45 pp., 1 map. (1906.) Part v. Die Physikalischen Verhältnisse des Wassers des Balatonsees. Sect. 2 and 3, Die Farbenercheinungen des Balatonsees, by Dr. E. von Cholnoky; Die Reflexionserscheinungen an Bewegten Wasseroberflächen, by Dr. Baron Bela Harkanyi. 88 pp., 2 col. plates. (1906.)

Vol. ii. "Die Biologie des Balatonsees." Part i. Die Fauna des Balatonsees. Beiträge zur Kenntnis des Planktons, by Dr. Geza Entz, Jun., and i. Nachtrag zur Aufzählung der Weichtiere, by Dr. A. Weiss and Theodor Kormos. 76 pp. (1906.) Part ii. Die Flora. Sect. r, Die Bacillarien des Balatonsees, by Dr. Josef Pantocsek. 112 pp., 17 plates. (1902.)

Vol. iii. "Social- und Anthropogeographie des Balatonsees." Part i. Archäologie der Balatonsees-Umgebung. Sect. i., Archäologische Spuren aus der Urzeit und dem Altertum bei Veszprem. By Gyula Rhé. 33 pp., 2 col. plates. (1906.) Part ii. Ethnographie der Umwohner des Balatonsees. By the late Dr. Johann Jankó, continued by Dr. Willibald Semayer. 499 pp., 1 map. (1906.) Part v. Bibliographie des Balatonsees. By Julius von Sziklay. 65 pp. (1906.)

"Spezialkarte der Balatonsees und seinen Umgebung." By Dr. Ludwig von Loczy. 4 sheets. Scale 1 to 75,000. (1903.)